

Work Order ID 79112

79112

Page 1

January-20-12 10:28:21 AM

Item ID: D205-634-041

Accept

N9000040100

Setup Start ***NS1***

Revision ID:

Item Name: Replacement Skidtube

Stop ***NS2***

Start Date: 20/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 07/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/01/20 Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2580-041	Rev.E								

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041

CHG002

CNC7005

Sizel/03

MLJ 12/04/03

110

0.00

110

BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

Re 12/03/14

B 79112

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID : 79112

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Item ID: D205-634-041

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N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Replacement Skidtube

Start Date: 20/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 07/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* Skidtubes Skidtubes	Memo 1- Deburr ends and remove bending marks 2- Prepare tube for welding as per QSI 004	0.00 0.00							
130 *130* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							

12-03-14

BE 0. 12-03-14

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Required Date: 07/02/2012 Req'd Qty: 1.00 *1*

Customer:

Reference:

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Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140

0.00

140

Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R Aluminum Rod

2-Grind welds on step as per Dwg D2580

3-Weld spacers as per dwg D2580

3- ***N/A*** Insert D4202-1 spacer, swage as per QSI002 and trim/ grind
flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2
x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimension.

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Deburr

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

NA

BE 12/03/15

12-03-15

DP

12-03-15

W/O:		WORK ORDER CHANGES					
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Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	QC10- Inspect visual per QSI004- ground welds	0.00							
150									
QC	Memo	0.00							
Quality Control									
160	QC5- Inspect part completeness to step on W/O	0.00							
160									
QC	Memo	0.00							
Quality Control									
170	Pressure Wash per QSI005 4.3	0.00							
170									
HandFinish	Memo	0.00							
Hand Finishing	Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.								

1X Ø M-12/03/17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum	0.00							
180									
Powdercoat	Memo	0.00							
Powder Coating	START TIME: <u>3:15</u> OVEN TEMPERATURE: <u>320°</u> FINISH TIME: <u>3:45</u>								
190	QC3- Inspect Part Finish	0.00							
190									
QC	Memo	0.00							
Quality Control									

1 BR 12-8-19

NG m-12/03/27

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Item ID: D205-634-041 Accept *N900040100* Setup Start *NS1*
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 Item Name: Replacement Skidtube
 Start Date: 20/01/2012 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 07/02/2012 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200

0.00

200

HandFinish

Hand Finishing

Memo

0.00

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates
 A/R Sikaflex-291 M120813
 Sikaflex expire date: 12/08

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive.
 A/R Sikaflex-291 M120813
 Sikaflex expire date: 12/08

5-Wing Walk as per Dwg D2580 and QSI 005 4.4
 Batch: M120959

1X/M-12/03/27

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Revision ID:

Stop ***NS2***

Item Name: Replacement Skidtube

Start Date: 20/01/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 07/02/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

QC5- Inspect part completeness to step on W/O

0.00

210

QC

Memo

0.00

Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

220

Packaging

0.00

220

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD205-634-041

Location:

PPP Rev: M

230

QC21- Final Inspection - Work Order Release

0.00

230

QC

Memo

0.00

Quality Control

SP12-04-03

MLJ 12/04/03

012004-3

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

January-20-12 10:28:24 AM

Page 1

Work Order ID: 79112

79112

Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 20/01/2012

Required Date: 07/02/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30
KJ IPP Rev P 10.02.19
per PAR09-043 EC verified by:DD
IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q
10.12.01 as per chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D4202-1 *D4202-1* Spacer		Manufactured	No			140	Each	446.0000	20	20			
<div style="display: flex; justify-content: space-between;"> B 79806 ** (22) 12-03-14 </div>													

Location	Loc Qty	Loc Code
LG	446	
77727	123	
77729	323	

D2580-1 *D2580-1* 205 Skidtube bent detail		Manufactured	No			110	Each	9.0000	1	1			
<div style="display: flex; justify-content: space-between;"> B 80895 ** 12/03/14 </div>													

Location	Loc Qty	Loc Code
LG	9	
76570	2	
77679	2	
78240	2	
78241	1	
78531	2	

D2576-3 *D2576-3* Step (maching detail)		Manufactured	No			140	Each	84.0000	1	1			
<div style="display: flex; justify-content: space-between;"> ** BE 12/03/15 </div>													

Location	Loc Qty	Loc Code
LG	84	
70883	34	
74136	50	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

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Work Order ID: 79112

79112

Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 20/01/2012

Required Date: 07/02/2012

Start Qty: 1.00

Required Qty: 1.00

D2855

Manufactured No

200 Each

33.0000 1 1

D2855

Cap

15074

**

m-l 12/03/27

Location

Loc Qty

Loc Code

FP002

33

65519

2

73347

31

AN3-5A

Purchased No

200 Each

1,262.000 2 2

AN3-5A

Bolt

**

m-l 12/03/27

Location

Loc Qty

Loc Code

ST350

1262

115371

46

117423

216

118626 ✓

300

119355

200

120187

500

AN960JD10L

NAS1149D0332J Purchased

No

200 Each

0.0000 2 2

***AN960JD10L ***

Washer

**

120644

m-l 12/03/27

2

✗

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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79112

Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 20/01/2012

Required Date: 07/02/2012

Start Qty: 1.00

Required Qty: 1.00

ALS7-1032-130

Purchased

No

200

Each

2,472.000

50

50

AIS7-1032-130

Insert

**

m-l 12/03/27

Location

Loc Qty

Loc Code

ST280

328

117717

27

118966

22

119775

279

ST281

71

119794

71

ST282

2073

119530

73

120181 ✓

2000

AN3C4A

Purchased

No

200

Each

2,823.000

50

50

AN3C4A

BOLT

**

120521

m-l 12/03/27
50

Location

Loc Qty

Loc Code

ST350

2823

117313

2

117688

5

117872

10

118112

16

118451

2

118838

4

119749

784

120187

2000

AN960C10L

NAS1149C0332
R

Purchased

No

200

Each

0.0000

50

50

***AN960C10I ***

washer

**

120648

m-l 12/03/27
50
X

January-20-12 10:28:25 AM

Shop Packet Print

Page 3

W/O:		WORK ORDER CHANGES					
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D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 20/01/2012

Required Date: 07/02/2012

Start Qty: 1.00

Required Qty: 1.00

D3566-13

Manufactured No

200

Each

64.0000

1

1

D3566-13

Gasket

**

m-l 12/03/27

Location

Loc Qty

Loc Code

FP002

64

68341

1

73322

3

76947 ✓

60

D3566-5

Manufactured No

200

Each

37.0000

1

1

D3566-5

Gasket

**

80374

m-l 12/03/27

Location

Loc Qty

Loc Code

FP002

37

75069

4

76945

33

D3566-1

Manufactured No

200

Each

44.0000

2

2

D3566-1

Gasket

**

81619

m-l 12/03/27

Location

Loc Qty

Loc Code

FP002

44

68924

2

76942

18

77569

24

D3564-11

Manufactured No

200

Each

19.0000

1

1

D3564-11

Wearshoe

**

77056

m-l 12/03/27

Location

Loc Qty

Loc Code

FP

12

76268

12

FP001

7

77614

7

January-20-12 10:28:25 AM

Shop Packet Print

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Start Date: 20/01/2012

Required Date: 07/02/2012

Start Qty: 1.00

Required Qty: 1.00

D3564-13

Manufactured No

200 Each

49.0000 1 1

D3564-13

Wearshoe

**

m-p 12/03/27

Location	Loc Qty	Loc Code
FP001	28	
71594	1	
75045	12	
77610 ✓	15	
FP002	21	
76946	21	

D3564-9

Manufactured No

200 Each

6.0000 1 1

D3564-9

Wearshoe

**

78872

m-p 12/03/27

Location	Loc Qty	Loc Code
FP001	6	
67590	4	
69943	1	
75071	1	

D3564-5

Manufactured No

200 Each

48.0000 1 1

D3564-5

Wearshoe

**

80343

m-p 12/03/27

Location	Loc Qty	Loc Code
FG	2	
34806	2	
FP001	46	
73330	1	
76269	18	
76944	15	
77609	12	

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Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 20/01/2012

Required Date: 07/02/2012

Start Qty: 1.00

Required Qty: 1.00

D2594-3

Manufactured No

200

Each

336.0000

16

16

D2594-3

O-Ring, 205 Skidtube

**

79155

16 m-d 12/03/27

Location

Loc Qty

Loc Code

FP001

336

65518

41

73490

295

D2594-1

Manufactured No

200

Each

352.0000

16

16

D2594-1

Plug, 205 Skidtube

**

① CF 12-3-14

Location

Loc Qty

Loc Code

FP001

352

73401

30

74442

34

74869

184

76075

104

77035

16 m-d 12/03/27

B80895

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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LIST OF MATERIALS					
ITEM	QTY -041	QTY -045	QTY -047	PART NUMBER	DESCRIPTION
1	X			D2580-041	SKIDTUBE ASSEMBLY
2		X		D2580-045	SKIDTUBE ASSEMBLY
3			X	D2580-047	SKIDTUBE ASSEMBLY
4	1	1	1	D2500-1-190	EXTRUSION
5			16	D2570	BUSHING
6	1	1	1	D2576-3	STEP
7	20	24	25	D2579	SPACER
8	16	16	8	D2594-1	PLUG
9	16	16	8	D2594-3	O-RING
10	1	1	1	D2596	205 WEB
11	1	1	1	D2855	AFT CAP
12	1	1		D3564-5	WEARSHOE
13	1	1		D3564-9	WEARSHOE
14	1	1		D3564-11	WEARSHOE
15	1	1		D3564-13	WEARSHOE
16	2	2		D3566-1	GASKET
17	1	1		D3566-5	GASKET
18	1	1		D3566-13	GASKET
19			1	D4406-041	WEARPLATE ASSEMBLY
20			1	D4406-043	WEARPLATE ASSEMBLY
21	50	50		ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
22	50	50		AN3C4A	BOLT
23	2	2	2	AN3-5A	BOLT
24			8	AN4-45A	BOLT
25	50	50		NAS1149C0332R	WASHER (AN960C10L)
26	2	2	2	NAS1149D0332J	WASHER (AN960JD10L)
27			8	MS21042-4	NUT (OR MS21042L4)

GENERAL NOTES:

- MATERIAL: N/A
- FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY (-041/-047) GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
POWDER COAT ASSEMBLY (-045) GREEN SANDEX (REF 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4.
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: NONE
- WEIGHT: D2580-041 = 34.5 lbs
D2580-045 = 34.5 lbs
D2580-047 = 37.7 lbs
- WELDING PER DART QSI 004.
- INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- USE DART DRILL TEMPLATE DT8217 & DT8937 ONLY FOR D2580-041/-045 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTIONS B-B AND F-F (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/-291.
- INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES FOR D2580-041/-045 AND 8 PLACES FOR D2580-047)
- IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

DEO ATTACHED

RELEASED
2011-08-29

E	ADD D2580-047 (ZN C4-7) AND D2580-7 (ZN B3-8); INCLUDED DEO D2580-D-1; REFORMATTED DRAWING TO CURRENT STANDARDS; DT8217 & DT8937 WAS TD2577-205 (ZN C4-1)	RF	11.06.21
D	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	PH	07.04.05
C	REDRAWN, INCLUDED DEO 9094/ 9097	CP	98.08.26
B	AS MANUFACTURED	DS	96.12.02
A	NEW ISSUE	DS	96.09.16
REV.	DESCRIPTION	BY	DATE
DESIGN	#	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	10	DRAWING NO.	REV. E
MFG. APPR.	10	D2580	SHEET 1 OF 8
APPROVED	10	TITLE	SCALE
DE APPR.	10	205 SKIDTUBE ASSEMBLY	NTS
DATE	11.06.21	COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR FOR REPRODUCTION TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

NO 79112-MLJ
12/01/20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

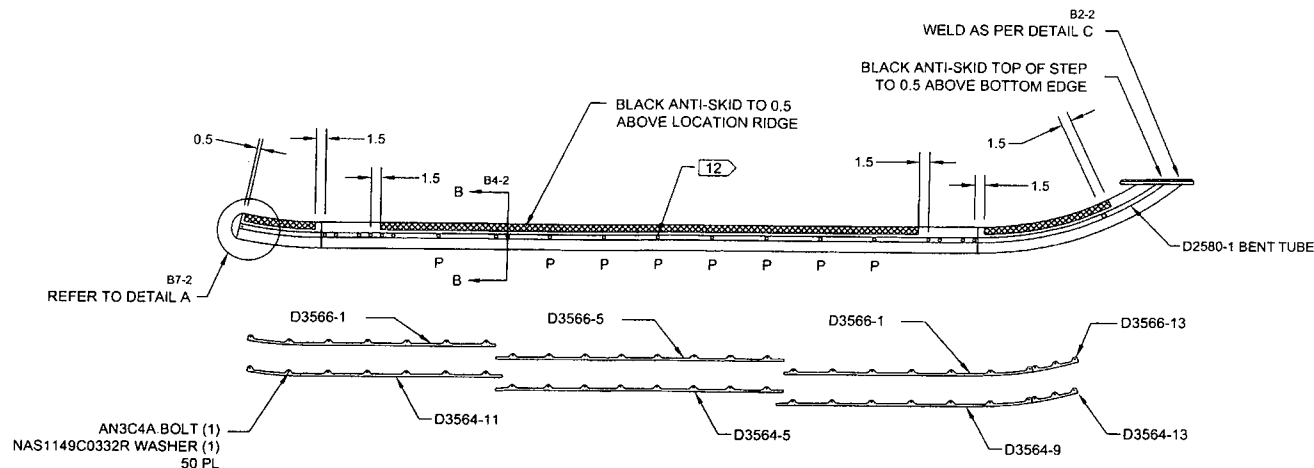
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

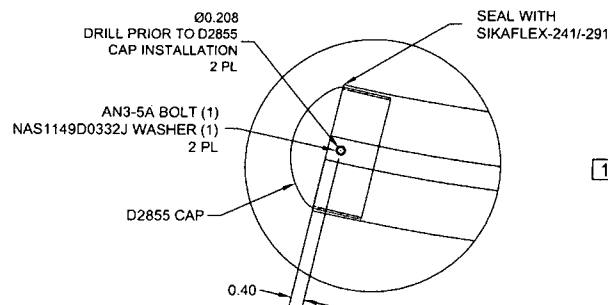
NOTE: Date & initial all entries

79112

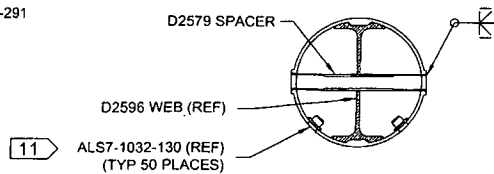


D2580-041 ASSEMBLY DETAIL

DETAIL A C7-2
SCALE 5X

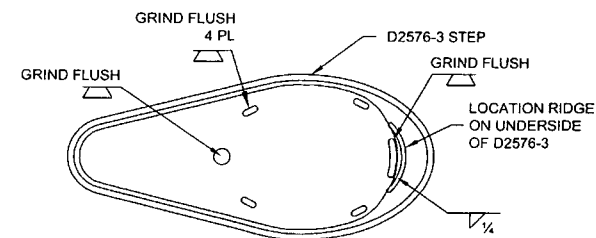


D5-2
SECTION B-B
SCALE 5X



- AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
 2. INSERT D2579 SPACER (20 PLACES)
 3. WELD INTO PLACE AND GRIND FLUSH
 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

DETAIL C D3-2
SCALE 5X



DEO ATTACHED
RELEASED
2011-08-30
JW

DESIGN	#	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	10	DRAWING NO.	REV. E
MFG. APPR.	15	D2580	SHEET 2 OF 8
APPROVED	18	TITLE	SCALE
DE APPR.	19	205 SKIDTUBE ASSEMBLY	NTS
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Dart Aerospace Ltd

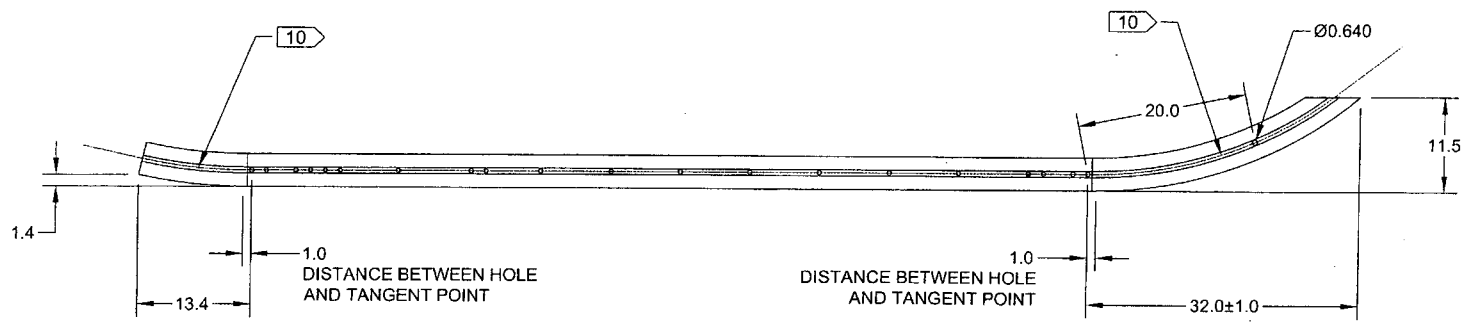
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

79112



D2580-1 BENT TUBE
(MAKE FROM D2580-101 TUBE)

DEO ATTACHED
RELEASED
2011-08-28
JW

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. E
MFG. APPR.	RF	D2580	SHEET 3 OF 8
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	205 SKIDTUBE ASSEMBLY	NTS
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3

2

1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

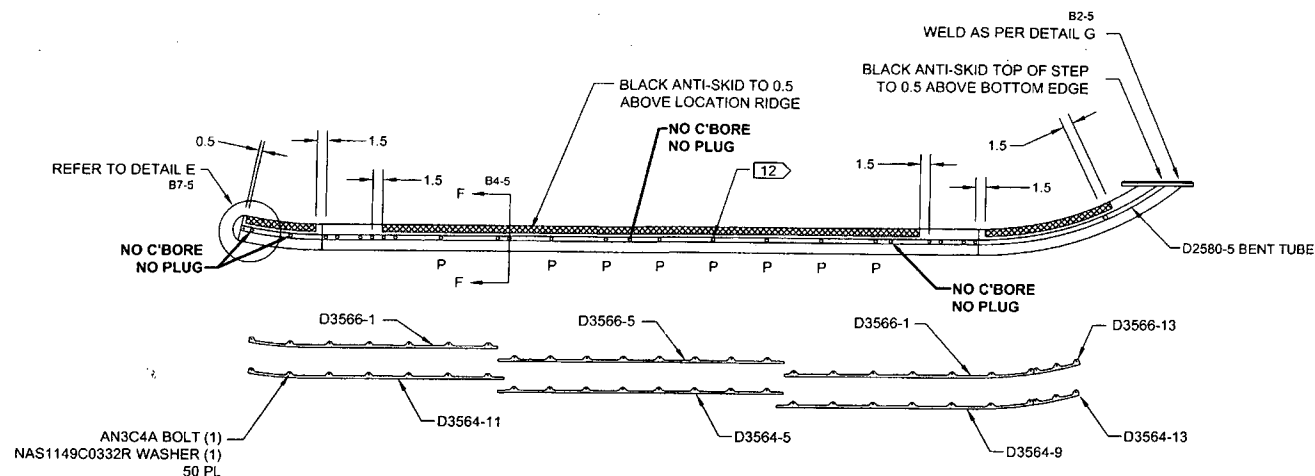
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

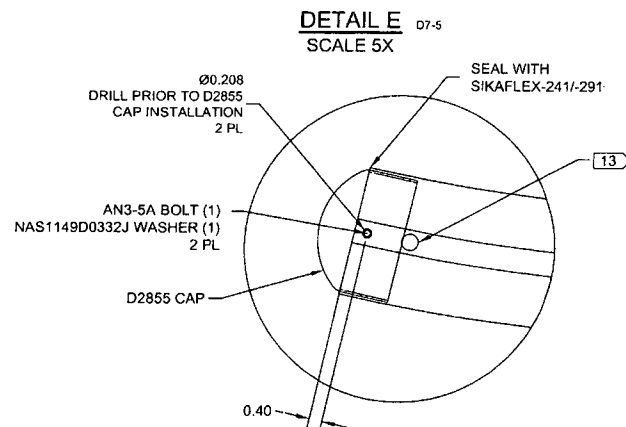
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

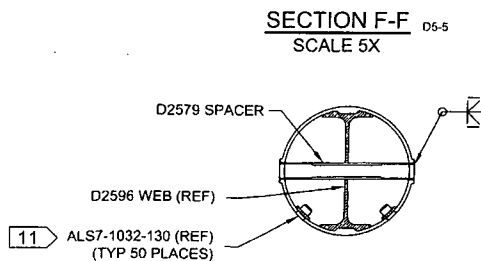
79112



D2580-045 ASSEMBLY DETAIL

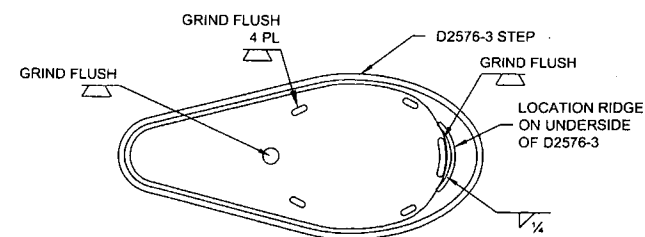


DETAIL E D7-5
SCALE 5X



SECTION F-F D6-5
SCALE 5X

- AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
 2. INSERT D2579 SPACER (24 PLACES)
 3. WELD INTO PLACE AND GRIND FLUSH
 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP



DETAIL G D3-5
SCALE 5X

DEO ATTACHED
RELEASED
2011-08-29
ANT

DESIGN	#	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	10	DRAWING NO.	REV. E
MFG. APPR.	10	D2580	SHEET 4 OF 8
APPROVED	10	TITLE	SCALE
DE APPR.	#	205 SKIDTUBE ASSEMBLY	NTS
DATE	11.06.21	<small>COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Technical drawing of a bridge deck cross-section. The drawing shows a horizontal section of a bridge deck with various dimensions and components labeled. Key dimensions include: 51.340 (total width), 39.580 (width to centerline), 5.985 (width to edge), 5.338 REF (reference width), 3.630 REF (reference width), 5.915 (width to centerline), 20.0 (width to edge), 11.5 (height), 1.4 (height), 1.0 (height), 13.4 (width), 32.0 ± 1.0 (width), and 1.0 (width). Components labeled include Ø0.508 8 PL (reinforcement bars), Ø0.640 (reinforcement bars), and 10 (reinforcement bars). The drawing also indicates the distance between holes and tangent points.

RELEASE
2011-08-29

DESIGN	#	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		
DRAWN	RF			
CHECKED	RF		DRAWING NO.	REV. E
MFG. APPR.	RF		D2580	SHEET 5 OF 8
APPROVED	#		TITLE	SCALE
DE APPR.	#		205 SKIDTUBE ASSEMBLY	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

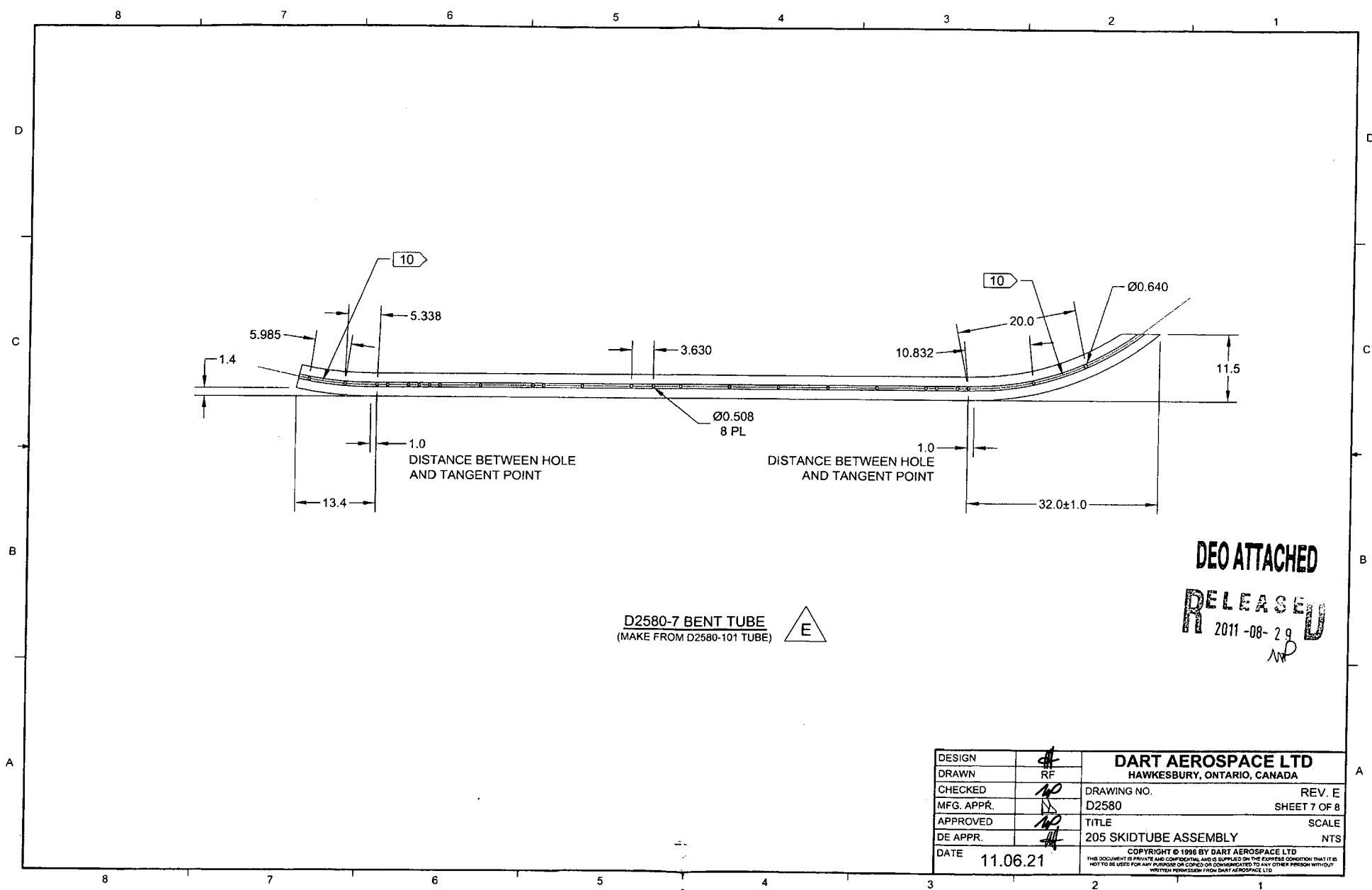
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

29112



D2580-7 BENT TUBE
(MAKE FROM D2580-101 TUBE)



DEO ATTACHED
RELEASED
2011-08-29
ND

DESIGN	#	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. E
CHECKED	10	D2580	SHEET 7 OF 8
MFG. APPR.	10	TITLE	SCALE
DE APPR.	#	205 SKIDTUBE ASSEMBLY	NTS
DATE	11.06.21	COPYRIGHT © 1998 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

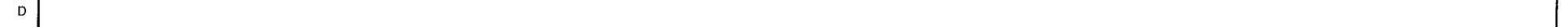
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



C REFER TO DETAIL D



DESIGN	#	DART AEROSPACE LTD
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RELEASE
2011-08-29

DESIGN	#	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	10	DRAWING NO.	REV. E
MFG. APPR.	10	D2580	SHEET 8 OF 8
APPROVED	10	TITLE	SCALE
DE APPR.	#	205 SKIDTUBE ASSEMBLY	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

79,112

DRAWING NO. D2580	TITLE 205 SKIDTUBE ASSEMBLY	REV. E	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D2580-E-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>UP</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>ER</i>	APPROVED <i>[Signature]</i>		DE APPR. <i>[Signature]</i>		
DATE 11.12.13	DATE 11.12.13	DATE 11.12.13	DATE 11.12.13		DATE 11.12.13		

PURPOSE:

CHANGE ALL C'BORED WELDED CROSSBOLT SPACERS TO SWAGED SPACERS

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

WAS

QTY	QTY	QTY	PART NUMBER	DESCRIPTION
-041	-045	-047		
20	24	25	D2579	CROSS BOLT SPACER

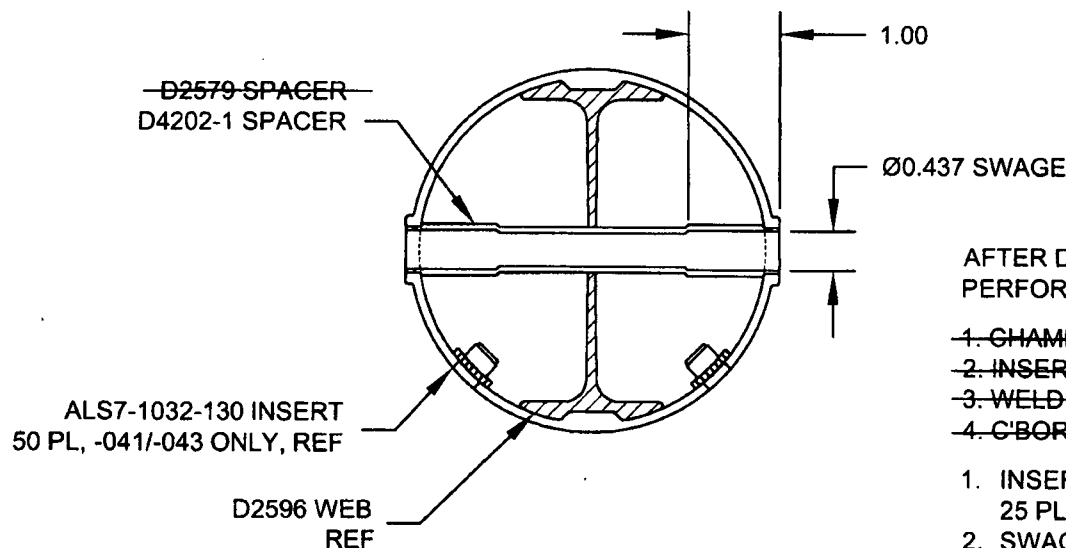
IS

	4		* D2579	CROSS BOLT SPACER
20	20	25	D4202-1	SPACER

SECTION B-B, SECTION F-F, & SECTION I-I ARE AMENDED AS FOLLOWS
FOR ALL HOLES THAT WERE ORIGINALLY C'BORED:

*** FOR -045 SKIDTUBE ONLY:**
WELD 4X D2579 SPACERS PER DWG
IN LOCATIONS MARKED "NO C'BORE".
REF SHEET 4 OF DWG.

RELEASED
2011-12-14



AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

1. INSERT D4202-1 SPACER, 20 PL (-041) OR 20 PL (-045) OR 25 PL (-047)
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002
3. TRIM / GRIND FLUSH PER QSI 002

SECTION B-B, F-F, I-I
NOT TO SCALE

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Part Number D205-634-041/041DG/041G Change Record
Description 205/212/412 SKIDPLATE

D205-634-041/041DG/041G

205/212/412 SKIDTUBE

Page 1 of 1[illegible]